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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,650	12/22/1999	THOMAS A. FIGURA	94-0280.04	6407

7590 06/18/2003

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EXAMINER	
KILDAY, LISA A	

ART UNIT	PAPER NUMBER
2829	

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/470,650	FIGURA ET AL.	
	Examiner	Art Unit	
	Lisa A Kilday	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-14,19,23,24,29-32 and 36-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-14,19,23,24,29-32 and 36-40* is/are rejected.

7)☒ Claim(s) *41-43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Arguments

Applicant's arguments with respect to claims 1-8, 10-14, 19, 23, 24, 29-32, and 36-43 have been considered but are moot in view of the new ground(s) of rejection.

1st paragraph 112 withdrawn. Newly discovered art. (ED)

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 11, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 11, 12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: claim 11 is drawn to a halogen-free process, therefore claim 12 is improperly dependent of claim 11 because claim 12 is drawn to a material comprising Carbon, a halogen, and hydrogen. Claim 12 contains a halogen while claim 11 is halogen-free.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10, 12-14, 19, 23-24, 29-32, and 36-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Shingo (JP 06-275568). In re claim 1, Shingo discloses in figures 2-3 forming a first feature (16) on said surface; providing a second feature (16) on said surface; and forming a polymer between said first and second feature in HDP environment (abstract; ¶¶16, 29, 36-38, 43, 52).

In re claim 2, Shingo discloses modifiying polymer within said HDP environment (¶¶37-8).

In re claim 3, Shingo discloses wherein said step of modifying said polymer further comprises etching a portion of said polymer (¶¶36-8, 52).

In re claims 4-6, Shingo discloses wherein said first and second feature comprises a metallic feature, metal feature, and metal line (ref. 16; ¶41).

In re claim 7, Shingo discloses in figures 2-3 a method of processing a semiconductor device comprising: providing a first protruding feature (ref. 16) on a layer of said semiconductor device; providing a second protruding feature (ref. 16 on said layer; defining a recess (21, 22) between the first and second protruding feature and plasma depositing a material w/in said recess (¶¶42-5)

In re claim 8, Shingo discloses wherein said step of plasma-depositing a material further comprises plasma depositing a material comprising a Carbon and a halogen (¶¶42-49).

In re claim 10, Shingo disclose wherein said step of plasma-depositing a material further comprises plasma depositing a material comprising a Carbon and a Hydrogen (¶¶2-3, 16).

In re claim 12, Shingo discloses said step of plasma-depositing a material further includes depositing a material comprising Carbon, a halogen, and hydrogen (¶¶2-3).

In re claim 13, Shingo discloses a method of depositing a polymer onto a wafer comprising: defining an opening (21) between exposed metal protruding features (16) on said wafer; providing a plasma; and exposing said opening to said plasma (abstract; ¶¶29, 33-37).

In re claim 14, Shingo discloses said plasma further comprises a high-density plasma (¶¶33-34, 52).

In re claim 19, Shingo discloses a method of providing a polymer between metal lines on a wafer in figures 2-3, comprising: providing a plasma source; exposing said wafer to said plasma source; introducing feed gas to said wafer; establishing a pressure around said wafer; and forming said polymer between said metal lines using said feed gas (abstract; claims 1-3; ¶¶3, 16, 29, 36-38, 41).

In re claim 23, Shingo discloses a method of forming a polymer, comprising: providing a semiconductor device (fig. 2-3) having at least two exposed metal lines (16); and performing a process on said semiconductor device wherein said process is defined by a plurality of parameters, comprising: a source power magnitude (¶43), a bias power magnitude, a pressure (¶43), a duration, and a process gas flow rate (¶43).

In re claims 24 & 29, Shingo discloses what is found in claim 23 and a high-density plasma etcher (¶52).

In re claims 30-32, Shingo discloses defining at least one recess (20) with said plurality of exposed protruding features (16); filling said recess with said polyme3r; and restricting formation of said polymer to within said recess (¶¶33-39).

In re claims 36, Shingo discloses a method of selectively providing a material between two metal lines of a semiconductor device, comprising: forming said material on said semiconductor device in a deposition environment; and removing any excess of said material in an etching environment, wherein said etching environment is the same as said deposition environment (¶¶33-39).

In re claim 37, Shingo discloses wherein the step of forming said material further comprises forming said material in an etch chamber (¶¶33, 42).

In re claim 38, Shingo discloses wherein said step of removing any excess of said material further comprises removing any excess of said material in a plasma deposition (¶38).

In re claim 39, Shingo discloses a method of processing a wafer having metal lines, comprising: providing a HDP and forming a polymer between said metal lines using HDP (abstract; ¶¶16, 29, 35-6, 43, 52).

In re claim 40, Shingo discloses a method of developing an in-process semiconductor device having a first metal and second metal line, comprising: place said device in a deposition and etch surrounding; and forming a polymer between said first and second metal line (abstract; ¶¶16, 29, 35-6, 43, 52).

Allowable Subject Matter

Claims 41-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takashi et al. (JP 59-103338), Haruo et al. (JP 62-030330), Masaaki et al. (62-032618), Dakesian et al. (5,419,822), Nakamura et al. (5,472,564), and Nakamura et al. (5,316,616).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (703) 306-5728. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo, can be reached on (703) 308-1233. The fax number for the group is (703) 305-3432. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

6/9/03

EVAN PERT